

Application No. 10/623,833
Attorney Docket No. 22177-0023

D.) AMENDMENTS TO THE DRAWINGS

None.

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E.) REMARKS

This Response is filed in response to the Final Office Action dated September 14, 2005.

Upon entry of this Response, claims 1-16 and 18-23 will be pending in the Application.

In the outstanding Final Office Action, the Examiner objected to claims 2, 8, 15 and 20; maintained the rejection of claims 1-10 and 16 under 35 U.S.C. 102(b) as being anticipated by Zeller et al. (U.S. Patent No. 6,055,292); maintained the rejection of claims 20, 22 and 23 under 35 U.S.C. 102(b) as being anticipated by Doeber et al. (U.S. Patent No. 5,511,106); maintained the rejection of claims 11, 14 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Zeller et al. (U.S. Patent No. 6,055,292) in view of Doeber et al. (U.S. Patent No. 5,511,106); maintained the rejection of claims 12 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Zeller et al. (U.S. Patent No. 6,055,292) and Doeber et al. (U.S. Patent No. 5,511,106) in further view of Fairleigh (U.S. Patent No. 5,997,176); and maintained the rejection of claims 18, 19 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Doeber et al. (U.S. Patent No. 5,511,106) in view of Doeber et al. (U.S. Patent No. 6,570,953).

REJECTION UNDER 35 U.S.C. 102

A. Rejection of claims 1-10 and 16

The Examiner rejected claims 1-10 and 16 under 35 U.S.C. 102(b) as being anticipated by Zeller et al. (U.S. Patent No. 6,055,292), hereinafter referred to as "Zeller."

Specifically, the Examiner stated that

4. Regarding claims 1 and 16, Zeller teaches a dental x-ray diagnostic apparatus for performing real-time digital radiography of a patient skull and method for same, comprising: a base frame for supporting the apparatus (Figure 7 and Column 2, line 55, the incorporated reference corresponding to US 5,511,106); a sliding frame configured to move vertically along the base frame and the sliding frame being moved by an independent actuator under microcomputer control (Figure 7); a rotary frame ("Rotary Unit") coupled to the sliding frame by a cinematic unit (2), and the rotary frame supporting an x-ray source (3) at one end, and an x-ray imager (18) at the other end; the said-cinematic unit being configured to execute orbital movements of the said-x-ray source and the x-ray imager around the patient skull, wherein the

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orbital movements comprise one rotation movement and two linear movements in a plane, and the orbital movements of the x-ray source and the x-ray imager being driven by independent actuators in the cinematic unit controlled by data supplied from a microcomputer. (The cinematic elements are taught by Figure 7 of Zeller and by the incorporation of the reference at Column 2, line 55. US 5,511,106 teaches orbital movement (Column 3, lines 22-33) by showing computer driven motors of a cinematic unit as having orbital movements of EP 0 229 308, which corresponds to 4,811,572.)

Applicant respectfully traverses the rejection of claims 1-10 and 16 under 35 U.S.C. 102(b).

Zeller, as understood, is directed to a dental X-ray diagnostic apparatus for producing panorama tomograms. The apparatus contains a height-adjustable carrying column at which a rotary unit is held. The rotary unit carries an X-ray source and an X-ray detector camera that are diametrically opposite. A head retainer and positioning arrangement are also provided. The camera is composed of an oblong housing having a slot at its side facing toward the X-ray source. A detector arrangement having one or more radiation-sensitive detectors, for example in the form of CCD sensors, is located in the inside of the camera behind the slot. The detector arrangement is held inside the detector camera so as to be adjustable in the direction of its longitudinal axis. A diaphragm system, which contains the primary diaphragm, is held so as to be synchronously adjustable relative to the detector camera. The detector elements arranged in the inside of the detector camera can be adjusted along the principal detector axis with a suitable adjustment mechanism, such as with a stepping motor and a spindle. Via a serial interface, the stepping motor communicates with control electronics of the apparatus. Via a further interface, the control electronics forwards control commands to an actuating drive arranged at the X-ray source. The synchronous adjustment of a primary diaphragm of the diaphragm system ensues with this actuating drive.

In contrast, independent claim 1 recites a dental x-ray diagnostic apparatus for performing real-time digital radiography of a patient skull, comprising: a base frame for supporting the apparatus; a sliding frame configured to move vertically along the base frame and the sliding frame being moved by an independent actuator under microcomputer control; a rotary frame coupled to the sliding frame by a cinematic unit, and the rotary frame supporting an x-ray

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source at one end, and an x-ray imager at the other end; the cinematic unit being configured to execute orbital movements of the x-ray source and the x-ray imager around the patient skull, wherein the orbital movements comprise one rotation movement and two linear movements in a plane, and the orbital movements of the x-ray source and the x-ray imager being driven by independent actuators in the cinematic unit controlled by data supplied from a microcomputer.

Independent claim 16 recites a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography, comprising the steps of: positioning a patient by a patient positioning system; irradiating a patient skull during an orbital movement of an x-ray source and an x-ray imager; performing acquisition of image data by the x-ray imager and digital processing of the image data for reconstruction of a diagnostic image; and wherein the orbital movement of the x-ray source and the x-ray imager being capable of one rotational movement and two linear movements in a plane, and the orbital movements of the x-ray source and the x-ray imager being driven by independent actuators in the cinematic unit controlled by data supplied from a microcomputer.

The examiner is reminded that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Ferdegan Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)." See Manual of Patent Examining Procedure, 8th Edition (MPEP), Section 2131.

In addition, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See MPEP, Section 2131.

Several of the features recited by Applicant in independent claims 1 and 16 are not taught or suggested by Zeller. First, Zeller does not teach or suggest that the orbital movements comprise (or are capable of) one rotation movement and two linear movements in a plane as recited by Applicant in independent claims 1 and 16. The apparatus in Zeller only discloses a rotational movement and, at best, one linear movement, i.e., movement in the vertical direction, but clearly does not discuss two linear movements in a plane as recited by Applicant in independent claims 1 and 16. In response to Applicant's previous arguments, the Examiner

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states that "[u]p and down motions are two linear motions in a vertical plane." See Final Office Action page 10. To begin, Applicant disagrees with the Examiner's interpretation and submits that the "up and down" movements set forth by the Examiner would be two directional movements, but can only be one linear movement because the movements are only on one line. Further, assuming for argument purposes only, that the "up and down" movements set forth by the Examiner are two linear movements, Zeller still does not teach or suggest Applicant's invention as recited in claims 1 and 16. Independent claims 1 and 16 recite that the orbital movements, which would include linear movements, are driven by independent actuators, which feature is not taught or suggested by Zeller. Based on the Examiner's interpretation of linear movements, Zeller would have to have an independent actuator for movement in the up direction and another independent actuator for movement in the down direction in order to anticipate Applicant's claims. However, Zeller does not have independent actuators for movement in each of the up and down directions, but only one actuator for movement in the up and down direction. Thus, since Zeller does not teach or suggest all of the limitations recited in independent claims 1 and 16, Applicant respectfully submits that Zeller does not anticipate Applicant's invention as recited in independent claims 1 and 16.

Furthermore, Applicant submits that the Examiner's reliance on additional references in support of the rejection of anticipation is still improper. As previously discussed, to maintain a rejection of anticipation the claim (e.g., claims 1 and 16) must be disclosed in a single reference. The Examiner argues that the additional references relied on by the Examiner have been incorporated by reference into Zeller. The Examiner, in response to Applicant's previous arguments, provides a detailed discussion of the requirements for incorporation by reference and states that the references to the additional documents in Zeller satisfy these requirements and form a part of Zeller. Applicant respectfully disagrees. As set forth by the Examiner, the requirements for a proper incorporation by reference are "an incorporating statement clearly identifying the subject matter which is incorporated and where it is to be found." See Final Office Action page 11, citing *In re Seversky*. In addition, the Examiner states that "the court wants a clear indication that two identified documents make one disclosure." See Final Office Action page 11. Applicant submits that there is no clear indication in Zeller that the two

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references make one disclosure or that clearly identifies subject matter to be incorporated. The specific language in Zeller asserted by the Examiner as indicating an intent to incorporate is as follows: "The structure as well as adjustment possibilities of the rotary unit 2 and of the head retainer and positioning arrangement 5 are known and, for example, are disclosed in the initially cited European Application 0 632 994." See Zeller, column 2, lines 51-55 and Final Office Action, page 3. As can clearly be seen in the language of Zeller, there is no intent to incorporate the European Application into the specification of Zeller. First, Zeller states that the technology is known in the art, indicating that there is no need for additional explanation of the technology. Furthermore, the European Application is identified as exemplary. Applicant submits that the identification of a reference as exemplary is hardly a clear indication that the reference is intended to be incorporated into the document (in this case Zeller). Thus, Applicant submits that the European Application is not part of Zeller and cannot be relied upon to support a rejection of anticipation by Zeller. Finally, the Examiner has not identified any passage in U.S. Patent 5,511,106, even if it has been incorporated into Zeller, which Applicant submits that it has not, that teaches or suggests two linear movements in a plane as recited by Applicant in independent claims 1 and 16.

Therefore, for the reasons given above, independent claims 1 and 16 are believed to be distinguishable from Zeller and therefore are not anticipated nor rendered obvious by Zeller.

Dependent claims 2-10 are believed to be allowable as depending from what is believed to be an allowable independent claim 1 for the reasons given above. In addition, claims 2-10 recite further limitations that distinguish over the applied art. In conclusion, it is respectfully submitted that claims 1-10 and 16 are not anticipated nor rendered obvious by Zeller and are therefore allowable.

B. Rejection of claims 20, 22 and 23

The Examiner rejected claims 20, 22 and 23 under 35 U.S.C. 102(b) as being anticipated by Doeber et al. (U.S. Patent No. 5,511,106), hereinafter referred to as "Doeber."

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Specifically, the Examiner stated that

15. Regarding Claim 20, Doeber teaches, a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in Cephalography, comprising the steps of: aligning an x-ray source with an x-ray imager, either manually or automatically, wherein the step of aligning the x-ray source with an x-ray imager includes the step of relocating the x-ray imager, either manually or automatically, from a Panoramic position to a Cephalographic position (Column 3, lines 22-47); positioning a patient by a patient positioning system (Column 3, lines 16-21); setting a collimator to provide a narrow x-ray beam laying in a vertical plane (Column 6, lines 20-27); starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a horizontal (Y) direction by a coordinated horizontal movement of the collimator and the x-ray imager under computer control (Column 5, line 36-column 6, line-51 and Figure 7, item 40); and, performing acquisition of image data by the x-ray imager, and computer processing (Column 9, lines 8-13) for reconstruction of a diagnostic image.

16. Regarding claim 22, Doeber teaches, as above for claim 20, a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in Cephalography, and further teaches the steps of: setting a collimator to provide a narrow x-ray beam laying in a horizontal plane; and starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a vertical (V) direction by a coordinated vertical movement of the primary x-ray collimator and the x-ray imager under computer control (Column 5, line 36-Column 6, line 8).

17. Regarding claim 23, Doeber teaches, as above for claim 20, a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in Cephalography, and further teaches the steps of: starting a scanning process during which the x-ray beam is rotationally translated (swept) through a patient skull by a coordinated rotational movement of the collimator (52) and the x-ray imager (4) under computer control, while the x-ray source (3) is fixed in position (Column 6, lines 20-42).

Applicants respectfully traverse the rejection of claims 20, 22 and 23 under 35 U.S.C. 102(b).

Doeber, as understood, is directed to an x-ray diagnostics installation for producing x-ray exposures of body parts of a patient and has a height-adjustable carrying column at which a rotatory unit is held, forming a carrier for a line detector camera arranged diametrically opposite

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a radiation source. The line detector camera contains an x-ray detector arranged behind a slot-shaped opening. The line detector camera can be horizontally or vertically arranged. An adjustment system adjusts the line detector camera relative to the body part such that the slot opening is moved along the body part, whereby the fan beam limited by the radiation diaphragm of the radiation source is moved synchronously relative to the camera motion. The carrying column is height-adjustable with a drive, and the rotatory unit can be turned and pivoted with one or more drives.

In contrast, independent claim 20 recites a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in cephalography, comprising the steps of: aligning an x-ray source with an x-ray imager, either manually or automatically, wherein the step of aligning the x-ray source with an x-ray imager includes the step of relocating the x-ray imager, either manually or automatically, from a Panoramic position to a Cephalographic position; positioning a patient by a patient positioning system; setting a collimator to provide a narrow x-ray beam laying in a vertical plane; starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a horizontal (Y) direction by a coordinated horizontal movement of the collimator and the x-ray imager under computer control; and performing acquisition of image data by the x-ray imager, and computer processing for reconstruction of a diagnostic image.

Independent claim 22 recites a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in cephalography, comprising the steps of: aligning an x-ray source with an x-ray imager, either manually or automatically, wherein the step of aligning the x-ray source with an x-ray imager includes the step of relocating the x-ray imager, either manually or automatically, from a Panoramic position to a Cephalographic position; positioning a patient by a patient positioning system; setting a collimator to provide a narrow x-ray beam laying in a horizontal plane; starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a vertical (V) direction by a coordinated vertical movement of the collimator and the x-ray imager under computer control; and performing acquisition of image data by the x-ray imager, and computer processing for reconstruction of a diagnostic image.

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Independent claim 23 recites a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in cephalography, comprising the steps of: aligning an x-ray source with an x-ray imager, either manually or automatically; positioning a patient by a patient positioning system; setting a collimator to provide a narrow x-ray beam; starting a scanning process during which the x-ray beam is rotationally translated through a patient skull by a coordinated rotational movement of the collimator and the x-ray imager under computer control, while the x-ray source is fixed in position; and performing acquisition of image data by the x-ray imager, and computer processing for reconstruction of a diagnostic image.

The examiner is reminded that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)." See MPEP, Section 2131.

In addition, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See Section 2131.

Several of the features recited by Applicant in independent claims 20, 22 and 23 are not taught or suggested by Doeber. First, with regard to claims 20 and 22, Doeber does not teach or suggest the step of aligning the x-ray source with an x-ray imager includes the step of relocating the x-ray imager, either manually or automatically, from a Panoramic position to a Cephalographic position as recited by Applicant in independent claims 20 and 22. The system in Doeber has one embodiment for panoramic exposures and a second embodiment for cephalographic exposures, but does not disclose any technique or structure to relocate the imager between positions for the two different types of exposures as recited by Applicant in independent claims 20 and 22. Specifically, the cephalographic apparatus as shown in Figures 2 and 3 and described in Doeber at column 3, lines 36-38 is described as including "[a] boom 6 that carries the (second) head-holder 7 and positioning means is secured to the height-adjustable part 1a of the carrying column 1 (Fig. 2)." Thus, the description of the arm in the cephalographic apparatus of Doeber as being a boom, specifically precludes the "x-ray imager" in the cephalographic apparatus of Doeber from being moveable between a panoramic position and a cephalographic

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position. Thus, since Doeberl does not teach or suggest all of the limitations recited in independent claims 20 and 22, Applicant respectfully submits that Doeberl does not anticipate Applicant's invention as recited in independent claims 20 and 22.

In the final office action and in response to Applicant previous arguments, the Examiner states that "[t]he goal of Doeberl is to convert between panoramic and cephalographic exposures as taught by the adjustability features (one or more drive motors) of Column 3, lines 22-33 and the Summary of the Invention." See Final Office Action, page 12. Applicant respectfully submits that the Examiner's interpretation of the goal of Doeberl is misplaced and that the drive motors referenced by the Examiner are used for vertical movements, horizontal movements or rotational movements and not for any positioning of an x-ray imager between panoramic and cephalographic positions. First, Doeberl discusses a line detector that can be used for both panoramic and cephalographic exposures. See Doeberl, column 2, lines 12-16. This ability of the line detector to be used for different exposures in Doeberl does not teach or suggest that the x-ray imager can be relocated between a panoramic position and a cephalographic position as recited by Applicant in independent claims 20 and 22. For example, as discussed on pages 9 and 10 of Applicant's specification, the "x-ray imager is also provided with an independent active actuator." Thus, the relocation of the x-ray imager recited by Applicant, includes more than the use of a line detector for different types of exposures as discussed in Doeberl. Therefore, in view of the above, independent claims 20 and 22 are believed to be distinguishable from Doeberl and therefore is not anticipated nor rendered obvious by Doeberl.

With regard to claim 23, Doeberl does not teach or suggest the step of starting a scanning process during which the x-ray beam is rotationally translated through a patient skull by a coordinated rotational movement of the collimator and the x-ray imager under computer control, while the x-ray source is fixed in position as recited by Applicant in independent claim 23. The system in Doeberl discusses that the rotary unit can be rotated, but fails to discuss any rotary movement of the diaphragm and the imager without moving the radiator as recited by Applicant in independent claim 23. Furthermore, the system in Doeberl only provides for the linear movement of the diaphragm and the imager. See e.g., Doeberl, Figures 8 and 11. The

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Examiner is asked to identify the specific portion in Doeberl that teaches or suggests that the imager in Doeberl is capable of rotational movement.

In addition, Applicant strongly disagrees with the Examiner's characterization, in the rejection and in the response to arguments, of a sweeping of a beam as being the same as the rotational translation of the x-ray beam recited by Applicant in claim 23. Applicant requests the Examiner to explain how a sweeping (linear) motion can possibly be the same as the rotational translation of the beam recited by Applicant. It is pointed out that even Doeberl describes a sweep as either top to bottom or left to right depending on the arrangement. See Doeberl, column 5, lines 37-41.

Thus, since Doeberl does not teach or suggest all of the limitations recited in independent claim 23, Applicant respectfully submits that Doeberl does not anticipate Applicant's invention as recited in independent claim 23.

Therefore, for the reasons given above, independent claims 20, 22 and 23 are believed to be distinguishable from Doeberl and therefore are not anticipated nor rendered obvious by Doeberl.

REJECTION UNDER 35 U.S.C. 103

A. Rejection of claims 11, 14 and 15

The Examiner rejected claims 11, 14 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Zeller in view of Doeberl.

Applicants respectfully traverse the rejection of claims 11, 14 and 15 under 35 U.S.C. § 103(a).

Zeller is directed a dental x-ray diagnostic apparatus as discussed in greater detail above.

Doeberl is directed to an x-ray diagnostics installation as discussed in greater detail above.

Applicant submits that dependent claims 11, 14 and 15 are distinguishable from Zeller and/or Doeberl for at least the following reasons. To begin, dependent claims 11, 14 and 15 are believed to be distinguishable from Zeller and/or Doeberl as depending from what is believed to be an allowable independent claim 1 as discussed above. Furthermore, there is nothing in

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Doebert that teaches or suggests any of the limitations in independent claim 1 not taught or suggested by Zeller.

In conclusion, it is respectfully submitted that claims 11, 14 and 15 are not anticipated nor rendered obvious by Zeller and/or Doebert and are therefore allowable.

B. Rejection of claims 12 and 13

The Examiner rejected claims 12 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Zeller and Doebert in further view of Fairleigh (U.S. Patent No. 5,997,176), hereafter referred to as "Fairleigh."

Applicants respectfully traverse the rejection of claims 12 and 13 under 35 U.S.C. § 103(a).

Zeller is directed a dental x-ray diagnostic apparatus as discussed in greater detail above.

Doebert is directed to an x-ray diagnostics installation as discussed in greater detail above.

Fairleigh, as understood, is directed to an x-ray apparatus for producing a standard set of x-rays of a person's head while she is in a prone position.

Applicant submits that dependent claims 12 and 13 are distinguishable from Zeller, Doebert and/or Fairleigh for at least the following reasons. To begin, dependent claims 12 and 13 are believed to be distinguishable from Zeller, Doebert and/or Fairleigh as depending from what is believed to be an allowable independent claim 1 as discussed above. Furthermore, there is nothing in Fairleigh that teaches or suggests any of the limitations in independent claim 1 not taught or suggested by Zeller and/or Doebert.

In conclusion, it is respectfully submitted that claims 12 and 13 are not anticipated nor rendered obvious by Zeller, Doebert and/or Fairleigh and are therefore allowable.

C. Rejection of claims 18, 19 and 21

The Examiner rejected claims 18, 19 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Doebert in view of Doebert et al. (U.S. Patent No. 6,570,953), hereafter referred to as "Doebert."

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Specifically, the Examiner stated that

30 Regarding Claims 18 and 21, similarly to claims 20 and 22 above, Doeber teaches a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in cephalography. The cephalograms are tomosynthetically produced (Doeber, Column 8, lines 55-58) and Doeber provides for the correction of image distortions (Column 9, lines 8-13).

31 Doeber does not include correction of the magnification distortion in the horizontal direction.

32 Doeber teaches magnification distortion correction of tomosynthetically produced images. The relationship between a detector and a source are tracked so that the rigidity of the requirements of the parts with respect to one another can be relaxed (Column 2). The image is then reconstructed using magnification distortion correction so that variations during the scan are accounted for (Column 6, lines 6-33) and so that blur-free recording are obtained (Column 3, lines 4-6).

33 Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the magnification distortion correction of Doeber in the system of Doeber, since the correction can account for variations of the magnification during the scan (Doeber, Column 6, lines 6-33) so that blur-free recording are obtained (Doeber, Column 3, lines 4-6).

34 Regarding Claim 19, as above Doeber and Doeber teach the step of aligning the x-ray source with an x-ray imager including the step of relocating the x-ray imager, either manually or automatically, from a Panoramic position to a Cephalographic position (Doeber, Column 4, lines 51-67 and Summary of the Invention).

Applicants respectfully traverse the rejection of claims 18, 19 and 21 under 35 U.S.C. § 103(a).

Doeber is directed to an x-ray diagnostics installation as discussed in greater detail above.

Doeber, as understood, is directed to a method for making and reproducing a radiological tomogram of a subject.

In contrast, independent claim 18 recites a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in cephalography, comprising the steps of: aligning an x-ray source with an x-ray imager, either manually or automatically; positioning a

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patient by a patient positioning system; setting a collimator to provide a narrow x-ray beam laying in a vertical plane; starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a horizontal (Y) direction by a simultaneous and linear movement of the x-ray source and the x-ray imager in the horizontal direction under computer control; and performing acquisition of image data by the x-ray imager, and computer processing for reconstruction of a diagnostic image, inclusive of correction of a magnification distortion in the horizontal direction.

Independent claim 21 recites a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in cephalography, comprising the steps of: aligning an x-ray source with an x-ray imager, either manually or automatically, wherein the step of aligning the x-ray source with an x-ray imager includes the step of relocating the x-ray imager, either manually or automatically, from a Panoramic position to a Cephalographic position; positioning a patient by a patient positioning system; setting a collimator to provide a narrow x-ray beam laying in a horizontal plane; starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a vertical (V) direction by a coordinated vertical movement of the x-ray source and the x-ray imager under computer control; and performing acquisition of the image data by the x-ray imager, and computer processing for the reconstruction of the diagnostic image, inclusive of correction of the magnification distortion in the horizontal direction.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

See MPEP § 2143.03.

Several of the features recited by Applicant in independent claims 18 and 21 are not taught or suggested by Doeber in view of Dobert. First, with regard to claim 18, Doeber does not teach or suggest starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a horizontal (Y) direction by a simultaneous and linear

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movement of the x-ray source and the x-ray imager in the horizontal direction under computer control as recited by Applicant in independent claim 18. The system in Doeber only discuss a pivoting or rotational movement of the radiator and does not discuss any linear movement of the radiator (x-ray source) in the horizontal direction as recited by Applicant in independent claim 18. Next, Dohert appears to only be applied for the teaching of correcting magnification distortion and not for any movement of the x-ray source. Further, there is nothing in Dohert that teaches or suggests the simultaneous and linear movement of the x-ray source and the x-ray imager in the horizontal direction as recited by Applicant in independent claim 18.

Further, in response to Applicant previous arguments, the Examiner states "Applicant is arguing that both the x-ray beam and the x-ray source must be translated linearly. The language of the claim does not require this. Source rotation in the horizontal is a coordinated movement in a horizontal plane." See Final Office Action, page 12. Applicant has amended claim 18 to clearly indicate that the movement of the x-ray source is linear to correspond to Applicant's previous position. As claim 18 clearly requires linear movement of the x-ray source, Applicant submits that Doeber and Dohert do not teach or suggest this limitation and that claim 18 is distinguishable from Doeber and Dohert. Therefore, in view of the above, independent claim 18 is believed to be distinguishable from Doeber and/or Dohert and therefore is not anticipated nor rendered obvious by Doeber and/or Dohert.

With regard to claim 21, Doeber does not teach or suggest the step of aligning the x-ray source with an x-ray imager includes the step of relocating the x-ray imager, either manually or automatically, from a Panoramic position to a Cephalographic position as recited by Applicant in independent claim 21. The system in Doeber has one embodiment for panoramic exposures and a second embodiment for cephalographic exposures, but does not disclose any technique or structure to relocate the imager between positions for the two different types of exposures as recited by Applicant in independent claim 21. Specifically, the cephalographic apparatus as shown in Figures 2 and 3 and described in Doeber at column 3, lines 36-38 is described as including "[a] boom 6 that carries the (second) head-holder 7 and positioning means is secured to the height-adjustable part 1a of the carrying column 1 (Fig. 2)." Thus, the description of the arm in the cephalographic apparatus of Doeber as being a boom, specifically precludes the "x-ray

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imager" in the cephalographic apparatus of Doeberl from being moveable between a panoramic position and a cephalographic position. Next, Doeberl appears to only be applied for the teaching of correcting magnification distortion and not for any movement of the imager. Further, there is nothing in Doeberl that teaches or suggests relocating the imager between positions for the two different types of exposures as recited by Applicant in independent claim 21.

In the Final Office Action and in response to Applicant previous arguments, the Examiner states that "[t]he goal of Doeberl is to convert between panoramic and cephalographic exposures as taught by the adjustability features (one or more drive motors) of Column 3, lines 22-33 and the Summary of the Invention." See Final Office Action, page 12. Applicant respectfully submits that the Examiner's interpretation of the goal of Doeberl is misplaced and that the drive motors referenced by the Examiner are used for vertical movements or rotational movements and not for any positioning of an x-ray imager between panoramic and cephalographic positions. First, Doeberl discusses a line detector that can be used for both panoramic and cephalographic exposures. See Doeberl, column 2, lines 12-16. This ability of the line detector to be used for different exposures in Doeberl does not teach or suggest that the x-ray imager can be moved between a panoramic position and a cephalographic position as recited by Applicant in independent claim 21. For example, as discussed in Applicant's specification, the "x-ray imager is also provided with an independent active actuator." Thus, the relocation of the x-ray imager recited by Applicant, includes more than the use of a line detector for different types of exposures as discussed in Doeberl. Therefore, in view of the above, independent claim 21 is believed to be distinguishable from Doeberl and/or Doeberl and therefore is not anticipated nor rendered obvious by Doeberl and/or Doeberl.

Applicant submits that dependent claim 19 is distinguishable from Doeberl and/or Doeberl for at least the following reasons. To begin, dependent claim 19 is believed to be distinguishable from Doeberl and/or Doeberl as depending from what is believed to be an allowable independent claim 18 for the reasons discussed above. Additionally, claim 19 recites the relocating the x-ray imager, either manually or automatically, from a Panoramic position to a Cephalographic position, which feature, as discussed above with respect to claim 21 is not taught or suggested by Doeberl and/or Doeberl.

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In conclusion, it is respectfully submitted that claims 18, 19 and 21 are not anticipated nor rendered obvious by Dochert and/or Dohert and are therefore allowable.

OBJECTION TO THE CLAIMS

The Examiner objected to claims 2, 8, 15 and 20 for various informalities. Specifically, the Examiner stated that

1. Claims 2, 8 15 and 20 are objected to because of the following informalities: Claim 2 compares a size to a "conventional" size, which has no clear or definite meaning. Likewise, "narrow" in Claim 8 has no definite meaning. Claim 15 is objected to since it is not clear how the patient can be held firm, or immobilized, according to the goal of the invention, if the patient positioning system is moving during a scan process. Applicant's assistance is requested in assuring there is proper antecedence in the specification for the "firm" limitation in claim 15. Claim 20 is objected to for a spelling error in line 6, where "Cephalographic" should appear. Appropriate correction is required.

In response thereto, Applicant has amended claim 2 to remove the reference to "conventional" in a manner believed to overcome the objection of the Examiner. With regard to claim 8, Applicant submits that the phrase "narrow x-ray beam" is a term that is readily understood by one skilled in the art and as such is not indefinite. In addition, the term "narrow x-ray beam" is discussed throughout Applicant's specification, thereby providing the proper antecedent in the specification for the term. With regard to claim 15, Applicant submits that the language objected to by the Examiner in the claim is clear. First, the language of claim 15 states "the patient positioning system is translated relative to a corresponding support frame," which stated differently is, the patient positioning system is moved with respect to the support frame. Next, the patient can be held in a firm position even though the patient positioning system is moving because the patient positioning system is moving relative to a support arm that is also moving and to which the patient positioning system is attached. In other words, the patient positioning system can move with respect to the support arm to counteract a movement of the support arm. More detail on this operation can be found on page 16, lines 9-13 of Applicant's Specification, which paragraph also provides antecedent for the use of "firm" in claim 15. With

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regard to claim 20, Applicant has amended the claim to correct the misspelling of "Cephalographic" in a manner believed to overcome the objection of the Examiner.

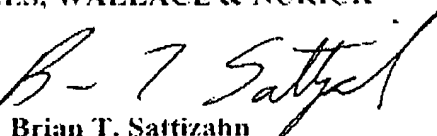
CONCLUSION

In view of the above, Applicant respectfully requests reconsideration of the Application and withdrawal of the outstanding objections and rejections. As a result of the amendments and remarks presented herein, Applicant respectfully submits that claims 1-16 and 18-23 are not anticipated by nor rendered obvious by Zeller, Doebert, Fairleigh, Dobert or their combination and thus, are in condition for allowance. As the claims are not anticipated by nor rendered obvious in view of the applied art, Applicant requests allowance of claims 1-16 and 18-23 in a timely manner. If the Examiner believes that prosecution of this Application could be expedited by a telephone conference, the Examiner is encouraged to contact the Applicant.

The Commissioner is hereby authorized to charge any additional fees and credit any overpayments to Deposit Account No. 50-1059.

Respectfully submitted,
MCNEES, WALLACE & NURICK

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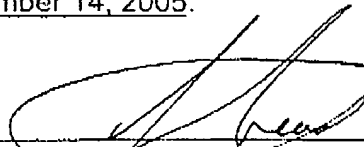
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